AMENDMENTS TO THE CLAIMS

1-11: (Canceled)

12. (Withdrawn) A probe whose nucleotide sequence is complimentary to DNA of HPV, which is selected from the group consisting of SEQ ID NOS: 1 to 19 and complementary sequences thereto.

13. (Withdrawn) A Human Papillomavirus (HPV) genotyping kit which comprises:

(i) a DNA chip with probes that have nucleotide sequences complementary to DNA of HPV;

(ii) primers for amplifying DNA obtained from clinical samples by PCR; and,

(iii) means for labeling amplified DNA hybridized with the probes of the said DNA chip.

14. (Withdrawn) The HPV genotyping kit of claim 13 wherein the probe is at least one selected from the group consisting of SEQ ID NOS: 1 to 19 and complementary sequences thereto.

15. (Withdrawn) The HPV genotyping kit of claim 13 or claim 14 wherein the DNA chip further comprises position markers to locate probes.

16. (Withdrawn) The HPV genotyping kit of claim 13 or claim 14 wherein the primers are selected from the group consisting of GP5+ having SEQ ID NO. 22, GP6+ having SEQ ID NO. 23, GP5d+ having SEQ ID NO. 24 and GP6d+ having SEQ ID NO. 25.

17. (Withdrawn) The HPV genotyping kit of claim 13 or claim 14 wherein the means for labeling is a biotin-binding material.

18. (Withdrawn) The HPV genotyping kit of claim 17 wherein the biotin-binding material is streptavidin-R-phycoerythrin.

19. (Withdrawn) A Human Papillomavirus (HPV) genotyping kit which comprises:

(i) a DNA chip with one or more probes selected from the group consisting of SEQ ID NOS: 1 to 19 and complementary sequences thereto, whose nucleotide sequences are complementary to DNA of HPV;

(ii) primers consisting of GP5+ having SEQ ID NO. 22, GP6+ having SEQ ID NO. 23, GP5d+ having SEQ ID NO. 24 and GP6d+ having SEQ ID NO. 25 for amplifying DNA obtained from clinical samples by PCR; and,

(iii) biotin for labeling amplified DNA hybridized with the probes of the said DNA chip and streptavidin-R-phycoerythrin as a biotin-binding material.

20. (Withdrawn) A process for preparing a DNA chip which comprises the steps of:

(i) preparing 5' terminal amine-linked DNA probes which have nucleotide sequences complementary to DNA of HPV;

(ii) affixing the DNA probes thus prepared to an aldehyde-derivatized surface of solid support; and,

(iii) reducing excessive aldehydes not reacted with amine.

21. (Withdrawn) The process for preparing a DNA chip of claim 20 wherein the probe is at least one selected from the group consisting of SEQ ID NOS: 1 to 19 and complementary sequences thereto.

22. (Withdrawn) The process for preparing a DNA chip of claim 9 wherein the concentration of probes which react with aldehyde-derivatized solid surface ranges from 100 to 300pmol/μl.

23. (Withdrawn) The process for preparing a DNA chip of claim 20 wherein affixing DNA probes to aldehyde-derivatized solid surface is performed via Schiff's base reaction between amine and aldehyde groups under an environment of 30 to 40°C and 70 to 100% humidity.

24. (Withdrawn) The process for preparing a DNA chip of claim 9 wherein the reduction of aldehyde is performed by the aid of a reducing agent, NaBH4.

25. (Twice Amended) A method for diagnosis of Human Papillomavirus (HPV) infection using a HPV genotyping kit, wherein the HPV genotyping kit comprises: (i) a DNA chip ~~with~~ comprising probes having HPV nucleic acid ~~that have nucleotide~~ sequences ~~complementary to DNA of HPV~~ set forth in SEQ ID NOs: 1-19, and complementary sequences thereof; (ii) biotin-labeled primers for amplifying DNA obtained from clinical samples; and (iii) means for labeling amplified DNA ~~hybridized~~ that hybridizes with the probes of the DNA chip, which method comprises ~~the steps of~~:

(a) amplifying DNA obtained from clinical samples with the primers of the HPV genotyping kit to ~~give~~ obtain biotin-containing amplified DNA;

(b) applying the amplified DNA ~~thus obtained~~ to the DNA chip ~~of the HPV genotyping kit to hybridize the amplified DNA with the probes of the DNA chip~~ under conditions which allow hybridization of the amplified DNA to the probes; ~~and,~~

(c) applying a biotin-binding label to the hybridized DNA on the chip; and

~~(c)~~ (d) detecting hybridized DNA ~~bound~~ on the surface of the DNA chip ~~after labeling the amplified DNA hybridized with the probes of the DNA chip with the means for labeling of the HPV genotyping kit.~~ by detecting the a biotin-binding label,

wherein detection of the biotin-binding label indicates the presence of HPV DNA in the sample which corresponds to the HPV probe to which the DNA is hybridized.

26. (Canceled)

27. (Previously presented) The method for diagnosis of HPV infection of claim 25, wherein amplifying DNA obtained from clinical samples comprises performing PCR using biotin-16-dUTP.

28. (Previously presented) The method for diagnosis of HPV infection of claim 25 or claim 26, wherein the DNA chip further comprises position markers to locate the probes.

29. (Currently Amended) The method for diagnosis of HPV infection of claim 25 ~~or claim 26~~, wherein the primers comprise at least one primer selected from the group consisting of GP5+ having SEQ ID NO: 22, GP6+ having SEQ ID NO: 23, GP5d+ having SEQ ID NO: 24 and GP6d+ having SEQ ID NO: 25.

30. (Canceled)

31. (Currently Amended) The method for diagnosis of HPV infection of claim ~~30~~ 25, wherein the biotin-binding material is streptavidin-R-phycoerythrin.

32. (Currently Amended) The method for diagnosis of HPV infection of claim 25 ~~or claim 26~~, wherein the DNA chip is prepared by a process comprising the steps of: (i) preparing 5' terminal amine-linked DNA probes which have nucleotide sequences complementary to DNA of HPV, (ii) affixing the DNA probes thus prepared to an aldehyde-derivatized surface of a solid support; and (iii) reducing excessive aldehydes not reacted with amine.

33. (Previously presented) The method for diagnosis of HPV infection of claim 32, wherein the concentration of probes which react with the aldehyde-derivatized surface of a solid support is between 100 and 300 pmol/μl.

34. (Previously presented) The method for diagnosis of HPV infection of claim 32, wherein affixing the DNA probes to an aldehyde-derivatized surface of a solid support comprises performing a Schiff's base reaction between the amine and aldehyde groups under an environment of between 30 and 40°C and between 70 and 100% humidity.

35. (Previously presented) The method for diagnosis of HPV infection of claim 32, wherein reducing excessive aldehydes not reacted with amine is performed by the aid of a reducing agent, $NaBH_4$.

36. (New) A method for diagnosis of Human Papillomavirus (HPV) infection using a HPV genotyping kit, wherein the HPV genotyping kit comprises: (i) a DNA chip comprising probes having HPV nucleic acid sequences set forth in SEQ ID NOs: 1-19, and complementary sequences thereof; (ii) primers containing a first label for amplifying DNA obtained from clinical samples; and (iii) means for labeling amplified DNA with a second label, wherein the DNA hybridizes with the probes of the DNA chip, which method comprises:

(a) amplifying DNA obtained from clinical samples with the primers of the HPV genotyping kit to obtain amplified DNA containing the first label;

(b) applying the amplified DNA to the DNA chip under conditions which allow hybridization of the amplified DNA to the probes;

(c) applying the second label to the hybridized DNA on the chip, wherein the second label binds to the first label; and

(d) detecting hybridized DNA on the surface of the DNA chip by detecting the second label, wherein detection of the second label indicates the presence of HPV DNA in the sample which corresponds to the HPV probe to which the DNA is hybridized.

37 (New) The method of claim 36, wherein the first label contains biotin and the second label contains streptavadin.

38 (New) The method of claim 36, wherein the biotin-containing label is biotin-16-dUTP and the streptavidin containing label is streptavidin-R-phycoerythrin